(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 620 374 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
31.07.2013 Bulletin 2013/31

(51) Int Cl.:
B65B 19/20 *(2006.01)* ***B65B 19/22*** *(2006.01)*
B65D 5/66 *(2006.01)* ***B65D 85/10*** *(2006.01)*

(21) Application number: **13152949.7**

(22) Date of filing: **28.01.2013**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **26.01.2012 IT BO20120033**

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(54) Packing method and unit for producing an outer container of a hinged-lid, slide-open package of smoking articles

(57) A packing method and unit (33) for producing a slide-open package (1) of smoking articles with a hinged lid (11); an inner container (3) is placed on a first panel (15') of an outer blank (23), which forms a rear wall (15) of an outer container (4), while a second panel (17') of the outer blank (23), which forms a top wall (17) of the lid (11), is coplanar with the first panel (15'); the second panel (17') is folded 90° with respect to the first panel (15'), so as to simultaneously slide an inner container (3) with respect to the outer blank (23); and, simultaneously and in coordination with folding the second panel (17') 90°, thrust is exerted on the inner container (3), to slide the inner container (3) with respect to the outer blank (23).

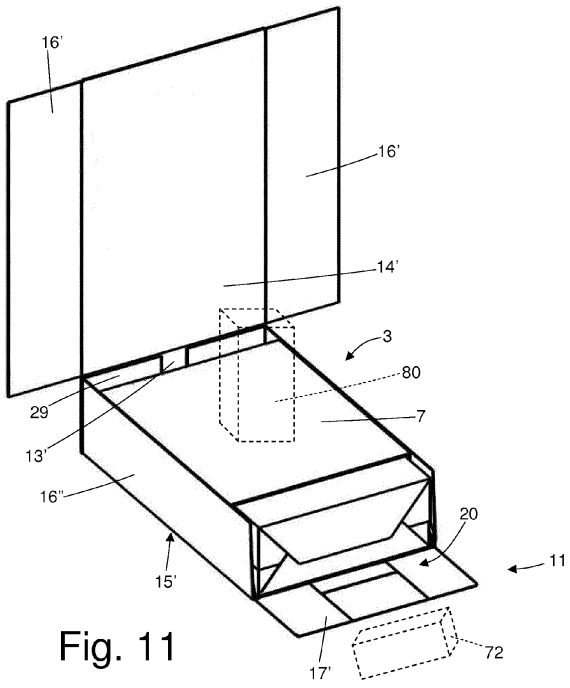

Fig. 11

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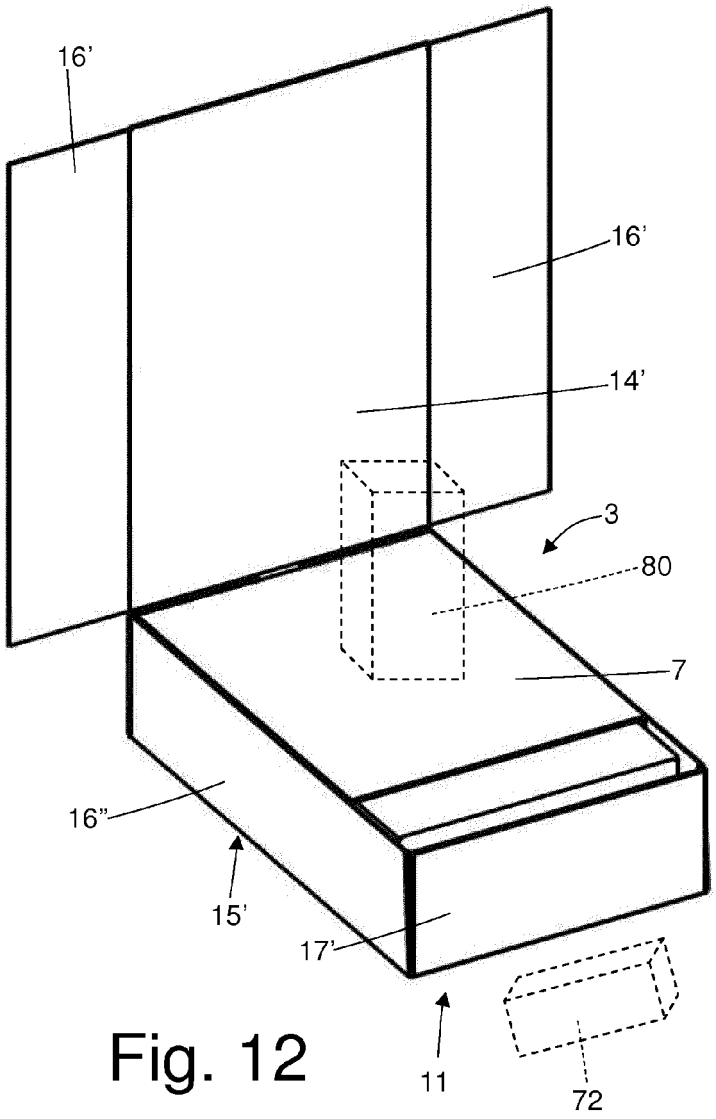

Fig. 12

Description

TECHNICAL FIELD

[0001] The present invention relates to a packing method and unit for producing an outer container of a hinged-lid, slide-open package of smoking articles.

[0002] In the following description, reference is made, for the sake of simplicity and purely by way of example, to a hinged-lid, slide-open packet of cigarettes.

BACKGROUND ART

[0003] Rigid, hinged-lid packets of cigarettes are currently the most widely marketed, by being easy to produce and easy and practical to use, and by effectively protecting the cigarettes inside.

[0004] In addition to the above rigid, hinged-lid packets of cigarettes, rigid slide-open packets have been proposed comprising two partly separable containers, one inserted inside the other. In other words, a rigid, slide-open packet of cigarettes comprises an inner container, which houses a foil-wrapped group of cigarettes and is housed inside an outer container to slide, with respect to the outer container, between a closed configuration, in which the inner container is inserted inside the outer container, and an open configuration, in which the inner container is expelled from the outer container.

[0005] A rigid, hinged-lid, slide-open packet of cigarettes has also been proposed in which the inner container (or outer container) has a hinged lid, which rotates between a closed position and an open position closing and opening an open top end of the inner container. The lid has a connecting tab connected at one end to the lid, and at the other end to the outer container (or inner container), to 'automatically' rotate the lid (i.e. without the user having to touch the lid) as the inner container slides with respect to the outer container.

[0006] Currently used methods of producing hinged-lid, slide-open packets of cigarettes, however, do not permit high output levels (i.e. the number of packets of cigarettes produced per unit of time), especially if a high quality standard is to be maintained. As a result, known packing machines for producing hinged-lid, slide-open packets of cigarettes are extremely slow-operating and only suitable for producing limited special series lots.

DESCRIPTION OF THE INVENTION

[0007] It is an object of the present invention to provide a packing method and unit for producing an outer container of a hinged-lid, slide-open package of smoking articles, designed to eliminate the above drawbacks, and which are cheap and easy to implement.

[0008] According to the present invention, there are provided a packing method and unit for producing an outer container of a hinged-lid, slide-open package of smoking articles, as claimed in the accompanying Claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a front view in perspective of a rigid, hinged-lid, slide-open packet of cigarettes in a closed configuration;

Figure 2 shows a front view in perspective of the Figure 1 packet of cigarettes in an open configuration;

Figure 3 shows a top plan view of the Figure 1 packet of cigarettes in an open configuration;

Figure 4 shows a front view in perspective of an outer container of the Figure 1 packet of cigarettes;

Figure 5 shows a front view in perspective of an inner container of the Figure 1 packet of cigarettes without the group of cigarettes and with a connecting tab;

Figure 6 shows a plan view of an inner blank from which to form an inner container of the Figure 1 packet of cigarettes;

Figure 7 shows a plan view of an outer blank from which to form an outer container of the Figure 1 packet of cigarettes;

Figure 8 shows a schematic in perspective of a packing machine, in accordance with the present invention, for producing the Figure 1 packet of cigarettes;

Figure 9 shows a schematic in perspective of a packing wheel of a second packing unit of the Figure 8 packing machine;

Figure 10 shows a plan view of the Figure 7 outer blank partly folded and glued just prior to being fed to the Figure 9 packing wheel;

Figures 11 and 12 show two larger-scale views in perspective of one stage in folding the Figure 7 outer blank on the Figure 9 packing wheel;

Figures 13 and 14 show respective schematic side views of the Figure 11 and 12 views in perspective.

PREFERRED EMBODIMENTS OF THE INVENTION

[0010] Number 1 in Figures 1 and 2 indicates as a whole a rigid, slide-open packet of cigarettes, which opens in a translatory (linear) movement.

[0011] The Figure 1 packet 1 of cigarettes comprises a wrapped, i.e. foil-wrapped group 2 of cigarettes (shown in Figure 2). Packet 1 of cigarettes also comprises a rigid inner container 3 actually containing the wrapped group 2 of cigarettes; and a rigid outer container 4, which houses inner container 3 to allow inner container 3 to slide in a translatory movement, with respect to outer container 4, between a closed configuration (Figure 1), in which inner container 3 is inserted fully inside outer container 4, and an open configuration (Figure 2), in which inner container 3 is expelled from outer container 4 to allow

access to wrapped group 2 of cigarettes.

[0012] As shown in Figure 5, inner container 3 is parallelepiped-shaped, and comprises a bottom wall 5; an open top end 6 opposite bottom wall 5; a front wall 7 and rear wall 8 opposite and parallel to each other; and two parallel lateral walls 9 interposed between walls 7 and 8.

[0013] As shown in Figure 4, outer container 4 has an open top end 10; and a lid 11 hinged to outer container 4 along a hinge 12 to rotate, with respect to outer container 4, between an open position (Figures 2, 3 and 4) and a closed position (Figure 1) respectively opening and closing open top end 10 of outer container 4 and, at the same time, also open top end 6 of inner container 3. Outer container 4 is parallelepiped-shaped, and comprises a bottom wall 13 opposite open top end 10; a front wall 14 and rear wall 15 opposite and parallel to each other; and two parallel lateral walls 16 interposed between walls 14 and 15.

[0014] Lid 11 comprises a top wall 17 which closes open top end 10 of outer container 4 (and, at the same time, open top end 6 of inner container 3) when lid 11 is closed. Top wall 17 of lid 11 is 'flat' (i.e. is formed from one cardboard panel or a number of compacted cardboard panels, and is therefore solid). When lid 11 is closed, top wall 17 of lid 11 is flush with the top edges of walls 14, 15 and 16 of outer container 4.

[0015] In a preferred embodiment, rear wall 8 of inner container 3 is connected to top wall 17 of lid 11 by a connecting tab 20 to rotate lid 11 'automatically' (i.e. without the user having to touch lid 11) as inner container 3 slides with respect to outer container 4. In other words, by means of connecting tab 20 connecting top wall 17 of lid 11 mechanically to rear wall 8 of inner container 3, inner container 3, as it slides with respect to outer container 4 from the closed to the open configuration, pushes lid 11 from the closed to the open position 'automatically' (i.e. without the user having to touch lid 11); and similarly, as inner container 3 slides with respect to outer container 4 from the open to the closed configuration, lid 11 is drawn by inner container 3 from the open to the closed position 'automatically' (i.e. without the user having to touch lid 11). The user therefore need simply exert sufficient thrust to slide inner container 3 with respect to outer container 4, without having to touch lid 11, which is rotated 'automatically'. Preferably, connecting tab 20 is connected seamlessly to lid 11, and is glued to rear wall 8 of inner container 3.

[0016] As shown in Figures 1, 2 and 4, lateral wall 16 of outer container 4 has a through window 21 allowing access to underlying lateral wall 9 of inner container 3 facing lateral wall 16 of outer container 4, to exert thrust on inner container 3 to move it between the closed and open configurations. In other words, to use packet 1 of cigarettes, the user holds outer container 4 with one hand and, with the thumb of the same hand, pushes on lateral wall 9 of inner container 3 through window 21 in lateral wall 16 of outer container 4, to exert thrust on inner container 3 and slide it with respect to outer container 4.

[0017] Containers 3 and 4 of the Figure 1-5 packet 1 of cigarettes are formed from corresponding blanks 22 and 23 as shown in Figures 6 and 7. Among other things, each blank 22, 23 comprises a number of parts, which are indicated, where possible, using the same reference numbers, with superscripts, as for the corresponding walls of respective container 3, 4.

[0018] With reference to Figure 6, inner blank 22 has two longitudinal fold lines 24, and a number of transverse fold lines 25 which define, between the two longitudinal fold lines 24, a panel 7' forming front wall 7 of inner container 3; a panel 5' forming bottom wall 5 of inner container 3; and a panel 8' forming rear wall 8 of inner container 3. Panel 8' is connected along a transverse fold line 25 to a reinforcing panel 8", in turn connected along a transverse fold line 25 to a further reinforcing panel 8"'. Reinforcing panels 8" and 8"' are folded 180° about respective transverse fold lines 25 and glued onto an inner surface of panel 8' to thicken (reinforce) rear wall 8. A different embodiment, not shown, has no reinforcing panels 8" and 8"'.

[0019] Panel 7' has two lateral wings 9', which form respective outer portions of lateral walls 9, are located on opposite sides of panel 7', and are separated from panel 7' by longitudinal fold lines 24. Panel 8' has two lateral wings 9", which are glued to corresponding wings 9', form respective inner portions of lateral walls 9, are located on opposite sides of panel 8', and are separated from panel 8' by longitudinal fold lines 24. Each lateral wing 9" of panel 8' has a tab 26 separated from respective lateral wing 9" by a transverse fold line 25.

[0020] With reference to Figure 7, outer blank 23 has two longitudinal fold lines 27, and a number of transverse fold lines 28 which define, between the two longitudinal fold lines 27, a panel 17' forming top wall 17 of lid 11; a panel 15' forming rear wall 15 of outer container 4; a panel 13' forming bottom wall 13 of outer container 4; and a panel 14' forming front wall 14 of outer container 4.

[0021] Panel 17' is connected along a transverse fold line 28 to connecting tab 20, which comprises three panels 20', 20", 20"' separated by respective transverse fold lines 28. Panel 20' of connecting tab 20 is glued to an inner surface of top wall 17 of lid 11 (i.e. to an inner surface of panel 17'), and panel 20"' of connecting tab 20 is glued to an outer surface of rear wall 8 of inner container 3 (i.e. to an outer surface of panel 8').

[0022] Panel 14' has two lateral wings 16', which form respective outer portions of lateral walls 16, are located on opposite sides of panel 14', and are separated from panel 14' by longitudinal fold lines 27. Panel 15' has two lateral wings 16", which are glued to corresponding wings 16', form respective inner portions of lateral walls 16, are located on opposite sides of panel 15', and are separated from panel 15' by longitudinal fold lines 27. Each lateral wing 16" of panel 15' has a tab 29 separated from respective lateral wing 16" by a transverse fold line 28.

[0023] Figure 8 shows a schematic of a cigarette packing machine 30 for producing packets 1 of cigarettes.

Packing machine 30 comprises, in succession, a packing unit 31 for forming wrapped groups 2 of cigarettes; a packing unit 32 for forming inner containers 3 by folding inner blanks 22 about corresponding wrapped groups 2 of cigarettes; a packing unit 33 for forming outer containers 4 (and so completing packets 1 of cigarettes) by folding outer blanks 23 about corresponding inner containers 3; and, finally, a processing unit 34, which receives packets 1 of cigarettes from packing unit 33 and opens (i.e. slides inner container 3 for the first time with respect to outer container 4, to partly expel inner container 3 and so rotate lid 11 into the open position) and closes each packet 1 of cigarettes.

[0024] As shown in Figure 9, packing unit 33 comprises a packing conveyor 69 with a number of packing pockets 70, each for housing an outer blank 23 and corresponding inner container 3, and for feeding outer blank 23 and inner container 3 along a packing path P4 extending between an input station S8 and an output station S10.

[0025] Packing unit 33 preferably comprises a packing conveyor (not shown) for partly prefolding outer blanks 23 and feeding the pre-folded outer blanks 23 to packing conveyor 69. A prefolded outer blank 23 (i.e. as it is fed to packing conveyor 69) is shown in Figure 10, in which tab 20 is folded 180° (about corresponding transverse fold line 28 connecting tab 20 to panel 17'), panels 20' and 20" are superimposed on the inner surface of panel 17', and panel 20"' contacts inner surface of panel 15'. As stated, only panel 20' is glued to panel 17'.

[0026] At input station S8, a partly prefolded outer blank 23 is fed into a packing pocket 70 so as to further fold outer blank 23. At a feed station S9 between input station S8 and output station S10, an inner container 3 is fed into a packing pocket 70 and onto the previously inserted outer blank 23. More specifically, rear wall 8 of inner container 3 is positioned resting on panel 15' of outer blank 23. At output station S10, outer container 4 (formed by folding outer blank 23 about inner container 3) is expelled from packing pocket 70 and fed to processing unit 34.

[0027] At input station S8, a folding device 71 folds tabs 29 of outer blank 23 ninety degrees (about corresponding transverse fold lines 28) with respect to wings 16", and then, by inserting outer blank 23 inside packing pocket 70, folds panel 13' ninety degrees (about corresponding transverse fold line 28), and folds the two wings 16" ninety degrees (about corresponding longitudinal fold lines 27, while panel 17' of outer blank 23 remains coplanar with panel 15'). In other words, after tabs 29 are folded 90°, insertion of outer blank 23 inside packing pocket 70 folds panel 13' and the two wings 16" ninety degrees (while panel 17' of outer blank 23 remains coplanar with panel 15'). Between feed station S9 and output station S10, a folding device 72 folds panel 17' of outer blank 23 (i.e. lid 11) 90° (about corresponding transverse fold line 28) with respect to panel 15', and at the same time slides inner container 3 axially with respect to outer blank 23 (as explained more clearly below). Directly downstream from folding device 72, a folding device 73 folds panel 14' ninety degrees (about corresponding transverse fold line 28). Folding outer blank 23 is completed at output station S10 as outer container 4 is expelled from packing pocket 70: as outer container 4 is expelled, a folding device 74 folds wings 16' ninety degrees (about corresponding longitudinal fold lines 27) onto wings 16" to form lateral walls 16 of outer container 4. A gumming device (not shown) is preferably provided directly upstream from folding device 74 to deposit glue between wings 16' and 16" just before wings 16' are folded.

[0028] In a preferred embodiment shown in Figures 8 and 9, packing conveyor 69 is defined by a wheel which rotates in steps about a central horizontal axis of rotation 75, so packing path P4 is circular and extends from input station S8 to output station S10.

[0029] Upstream from input station S8 of packing conveyor 69, a gumming device 77 deposits glue between tabs 29 and panel 13' of outer blank 23. Gumming device 77 also deposits glue 78 and glue 79 (Figure 10) onto panel 20"' of connecting tab 20 previously folded onto panel 15' when partly prefolding outer blank 23. Glue 78 and glue 79 glue rear wall 8 of inner container 3 to connecting tab 20 (i.e. to panel 20"' of connecting tab 20) as inner container 3 is fed onto panel 15' of outer blank 23 at feed station S9 of packing conveyor 69.

[0030] As shown in Figures 11-14, folding device 72 folds panel 17' of outer blank 23 (i.e. lid 11) 90° with respect to panel 15', and at the same time slides inner container 3 axially with respect to outer blank 23 (the axial sliding movement of inner container 3 with respect to outer blank 23 can be seen clearly by comparing the position of inner container 3 in Figures 11 and 13, before lid 11 is folded, and in Figures 12 and 14, after lid 11 is folded). The axial sliding movement of inner container 3 with respect to outer blank 23 as lid 11 is rotated about hinge 12 is the result of inner container 3 (more specifically, rear wall 8 of inner container 3) being connected mechanically to lid 11 (more specifically, to top wall 17 of lid 11) by connecting tab 20. So rotation of lid 11 about hinge 12 always results in a corresponding translatory movement of inner container 3 according to the transmission ratio produced by the mechanics of connecting tab 20 and by the three hinged panels 20', 20", 20"'.

[0031] Folding device 72 is associated with an actuator 80, which rests on front wall 7 of inner container 3 and is movable in two perpendicular directions (more specifically, translates both perpendicular to and parallel to front wall 7 of inner container 3). Actuator 80 comprises a suction head 81 (Figures 13 and 14) in which suction can be turned on/off. When a packing pocket 70 containing an outer blank 23 and respective inner container 3 reaches folding device 72, actuator 80 is moved towards inner container 3 to contact front wall 7 of inner container 3. Once actuator 80 is positioned contacting front wall 7 of inner container 3, suction is activated through suction head 81 to connect suction head 81 mechanically (by

suction) to front wall 7 of inner container 3.

[0032] Once suction is activated through suction head 81, actuator 80 and folding device 72 are moved together (as shown in Figures 13 and 14) and in coordinated manner to fold lid 11 and simultaneously slide inner container 3 with respect to outer blank 23: more specifically, actuator 80 is translated parallel to front wall 7 of inner container 3 to push inner container 3 axially (by pushing on front wall 7 of inner container 3), while folding device 72 is rotated about its axis of rotation (coaxial with hinge 12 of lid 11) to rotate lid 11. Lid 11 of outer container 4 being connected mechanically to inner container 3 by connecting tab 20, operation of actuator 80 and folding device 72 must be coordinated (i.e. translation of actuator 80 must always correspond to rotation of folding device 72 according to the transmission ratio produced by the mechanics of connecting tab 20) to prevent deformation and/or tearing.

[0033] It is important to note that, besides housing outer blank 23 and corresponding inner container 3, each packing pocket 70 also clamps (retains) at least panel 15' of outer blank 23 mechanically, to prevent axial movement of panel 15' in the translation direction of inner container 3 when folding lid 11 ninety degrees and as inner container 3 slides.

[0034] As stated, gumming device 77 deposits glue 78 and glue 79 simultaneously onto panel 20"' of connecting tab 20 previously folded onto panel 15' when partly prefolding outer blank 23. Glue 78 and glue 79 glue rear wall 8 of inner container 3 to connecting tab 20 (i.e. to panel 20"' of connecting tab 20) as inner container 3 is fed onto panel 15' of outer blank 23 at feed station S9 of packing conveyor 69. Glue 78 is permanent, drying glue, i.e. a certain length of time after it is deposited, the volatile components of glue 78 evaporate to form a permanent connection that can only be separated by irreparably tearing the connection apart; whereas glue 79 is non-dry, re-stick glue, i.e. even a long time after it is deposited, the characteristics of glue 79 remain unchanged, allowing the glued parts to be separated and stuck back together repeatedly. Preferably, permanent, drying glue 78 is a cold, vinyl-based glue.

[0035] In a preferred embodiment, non-dry, re-stick glue 79 is deposited far from a hinge 12' of connecting tab 20 (hinge 12' of connecting tab 20 is defined by the transverse fold line 28 separating panels 20" and 20"'), whereas permanent, drying glue 78 is deposited close to hinge 12' of connecting tab 20, so that, as folding device 72 folds lid 11, non-dry, re-stick glue 79 is subjected to shear (i.e. greater) stress, while permanent, drying glue 78 is subjected to tensile (i.e. less) stress. Because non-dry, re-stick glue 79 is capable of achieving maximum grip much faster (practically instantaneously), it is important that it be subjected to the greater stress; and, similarly, it is important that permanent, drying glue 78 be subjected to less stress, by taking a relatively long time to achieve adequate grip.

[0036] In the embodiment shown in the drawings, lid 11 only has top wall 17. In other perfectly equivalent embodiments not shown, lid 11 also has other walls (e.g. a front wall, two lateral walls and/or a rear wall).

[0037] In the embodiment shown in the drawings, connecting tab 20 forms an integral part of outer blank 23 (i.e. is connected seamlessly to lid 11 of outer container 4) and is glued to rear wall 8 of inner container 3. In an alternative, perfectly equivalent embodiment not shown, connecting tab 20 forms an integral part of inner blank 22 (i.e. is connected seamlessly to inner container 3) and is glued to top wall 17 of lid 11. Obviously, in this embodiment, glue 78 and glue 79 are deposited between connecting tab 20 and top wall 17 of lid 11.

[0038] In the embodiment shown in the drawings, connecting tab 20 comprises three panels 20', 20", 20"' separated by respective transverse fold lines 28. In alternative, perfectly equivalent embodiments not shown, connecting tab 20 comprises a different number of (e.g. two or four) panels separated by respective transverse fold lines 28, or comprises one panel with no transverse fold lines 28.

[0039] The packing method and corresponding packing unit 33 described above have numerous advantages, by enabling high-output production of outer containers 4 of packets 1 of cigarettes (i.e. a large number of outer containers 4 per unit of time) while still maintaining a high quality standard. This is made possible by actuator 80 accompanying and facilitating the sliding movement of inner container 3 with respect to outer blank 23 as folding device 72 rotates lid 11 through 90°. In fact, without actuator 80, the thrust exerted on inner container 3 to slide it is provided solely by connecting tab 20 and the grip afforded by glue 78 and glue 79. At this stage, however, the grip afforded by glue 78 and glue 79 is far from nominal, which can only be achieved after they set completely, so glue 78 and glue 79 offer no guarantee of withstanding the mechanical stress involved in transmitting thrust from lid 11 to inner container 3 via connecting tab 20. Without actuator 80, rotation of lid 11 may therefore result in partial failure of the glued joint between connecting tab 20 and rear wall 8 of inner container 3 (thus resulting in undesired movement of inner container 3 with respect to outer blank 23), or in complete failure of the glued joint between connecting tab 20 and rear wall 8 of inner container 3 (thus destroying the mechanism for opening packet 1 of cigarettes). In both cases, packet 1 of cigarettes is irreparably damaged, and must be rejected.

[0040] Without the aid of actuator 80, to avoid damaging the glued joint between connecting tab 20 and rear wall 8 of inner container 3, lid 11 must be folded 90° much more slowly (and even this is not always sufficient), thus greatly reducing the output of the packing process (i.e. the number of packets 1 of cigarettes produced per unit of time). Using actuator 80, on the other hand, the force transmitted by connecting tab 20, when folding lid 11 through 90°, is very little, if not nil, which means lid 11 can be folded 90° much faster, with no risk of (even slight-

ly) damaging the glued joint between connecting tab 20 and rear wall 8 of inner container 3.

Claims

1. A packing method for producing an outer container (4) of a slide-open package (1) of smoking articles with a hinged lid (11); the package (1) comprising:

   an inner container (3) housing a group (2) of smoking articles and having an open top end (6);
   the outer container (4), which is formed by folding an outer blank (23), and houses the inner container (3) to allow the inner container (3) to slide with respect to the outer container (4) between a closed position, in which the inner container (3) is inserted inside the outer container (4), and an open position, in which the inner container (3) is expelled from the outer container (4); and
   a lid (11), which is hinged to a rear wall (15) of the outer container (4), closes the open top end (6) of the inner container (3) when closed, and is connected mechanically to the inner container (3) by a connecting tab (20);
   the packing method comprising the steps of:

      placing the inner container (3) on a first panel (15') of the outer blank (23), which forms the rear wall (15) of the outer container (4), while a second panel (17') of the outer blank (23), which forms a top wall (17) of the lid (11), is coplanar with the first panel (15'); and
      folding the second panel (17') of the outer blank (23) 90° with respect to the first panel (15'), so as to simultaneously slide the inner container (3) with respect to the outer blank (23);
      the packing method being **characterized by** comprising the further step, simultaneous and coordinated with the step of folding the second panel (17') of the outer blank (23) 90°, of exerting thrust on the inner container (3), to slide the inner container (3) with respect to the outer blank (23), by means of an actuator (80) contacting a wall (7) of the inner container (3).

2. A packing method according to Claim 1, wherein the actuator (80) comprises a suction head (81), which engages the wall (7) of the inner container (3) by suction.

3. A packing method according to Claim 1 or 2, wherein the actuator (80) engages a front wall (7) of the inner container (3), which is parallel to and opposite the first panel (15') of the outer blank (23).

4. A packing method according to Claim 1, 2 or 3, and comprising, before placing the inner container (3) on a first panel (15') of the outer blank (23), the further steps of:

   placing the connecting tab (20) on the first panel (15') of the outer blank (23); and
   applying glue (78, 79) between the connecting tab (20) and a rear wall (8) of the inner container (3), so as to glue the connecting tab (20) to the rear wall (8) of the inner container (3) when the inner container (3) is placed on the first panel (15') of the outer blank (23).

5. A packing method according to Claim 4, and comprising the further step of applying both a first non-dry, re-stick glue (79), and a second permanent drying glue (78) between the connecting tab (20) and the rear wall (8) of the inner container (3).

6. A packing method according to Claim 5, and comprising the further steps of:

   applying the first non-dry, re-stick glue (79) far away from a hinge (12') of the connecting tab (20); and
   applying the second permanent drying glue (78) close to the hinge (12') of the connecting tab (20).

7. A packing method according to one of Claims 1 to 6, and comprising, before folding the second panel (17') of the outer blank (23) 90°, the further step of folding two wings (16") of the outer blank (23), which form two lateral walls (16) of the outer container (4), 90° with respect to the first panel (15') and onto two lateral walls (9) of the inner container (3).

8. A packing method according to one of Claims 1 to 7, and comprising, before folding the second panel (17') of the outer blank (23) 90°, the further step of folding a third panel (13') of the outer blank (23), which forms a bottom wall (13) of the outer container (4), 90° with respect to the first panel (15') and onto a bottom wall (5) of the inner container (3).

9. A packing method according to one of Claims 1 to 8, and comprising the further step of folding the second panel (17') of the outer blank (23) 90° by means of a folding device (72), which rotates about an axis of rotation coaxial with a hinge (12) of the lid (11).

10. A packing method according to one of Claims 1 to 9, wherein the actuator (80) is movable in two perpendicular directions, to translate both perpendicularly to the wall (7) of the inner container (3) and

parallel to the wall (7) of the inner container (3).

11. A packing method according to one of Claims 1 to 10, and comprising, before placing the inner container (3) on the first panel (15') of the outer blank (23), the further steps of:

positioning the connecting tab (20) so that it is located between the first panel (15') of the outer blank (23) and the inner container (3) when the inner container (3) is placed on the first panel (15') of the outer blank (23); and
applying glue (78, 79) to glue the connecting tab (20) when the inner container (3) is placed on the first panel (15') of the outer blank (23).

12. A packing method according to one of Claims 1 to 11, wherein the connecting tab (20) comprises three panels (20', 20", 20"') separated by respective transverse fold lines (28).

13. A packing method according to Claim 12, wherein:

a first panel (20') of the connecting tab (20) is glued to an inner surface of the top wall (17) of the lid (11) (i.e. to an inner surface of the second panel (17') of the outer blank (23)); and
a second panel (20"') of the connecting tab (20) is glued to an inner surface of the rear wall (8) of the inner container (3).

14. A packing unit (33) for producing an outer container (4) of a slide-open package (1) of smoking articles with a hinged lid (11); the package (1) comprising:

an inner container (3) housing a group (2) of smoking articles and having an open top end (6);
an outer container (4), which is formed by folding an outer blank (23), and houses the inner container (3) to allow the inner container (3) to slide with respect to the outer container (4) between a closed position, in which the inner container (3) is inserted inside the outer container (4), and an open position, in which the inner container (3) is expelled from the outer container (4); and
a lid (11), which is hinged to a rear wall (15) of the outer container (4), closes the open top end (6) of the inner container (3) when closed, and is connected mechanically to the inner container (3) by a connecting tab (20);
the packing unit (33) comprising:

a feed station (S9), which places the inner container (3) on a first panel (15') of the outer blank (23) forming the rear wall (15) of the outer container (4), while a second panel (17') of the outer blank (23), forming a top wall (17) of the lid (11), is coplanar with the first panel (15'); and
a folding device (72), which folds the second panel (17') of the outer blank (23) 90° with respect to the first panel (15'), so as to simultaneously slide the inner container (3) with respect to the outer blank (23);
the packing unit (33) being **characterized by** comprising an actuator (80), which contacts a wall (7) of the inner container (3), and, simultaneously and in coordination with folding the second panel (17') of the outer blank (23) 90°, exerts thrust on the inner container (3), to slide the inner container (3) with respect to the outer blank (23).

15. A packing unit (33) according to Claim 14, wherein:

at the feed station (S9), the connecting tab (20) is positioned so that it is located between the first panel (15') of the outer blank (23) and the inner container (3) when the inner container (3) is placed on the first panel (15') of the outer blank (23); and
a gumming device (77) applies glue (78, 79) to glue the connecting tab (20) when the inner container (3) is placed on the first panel (15') of the outer blank (23).

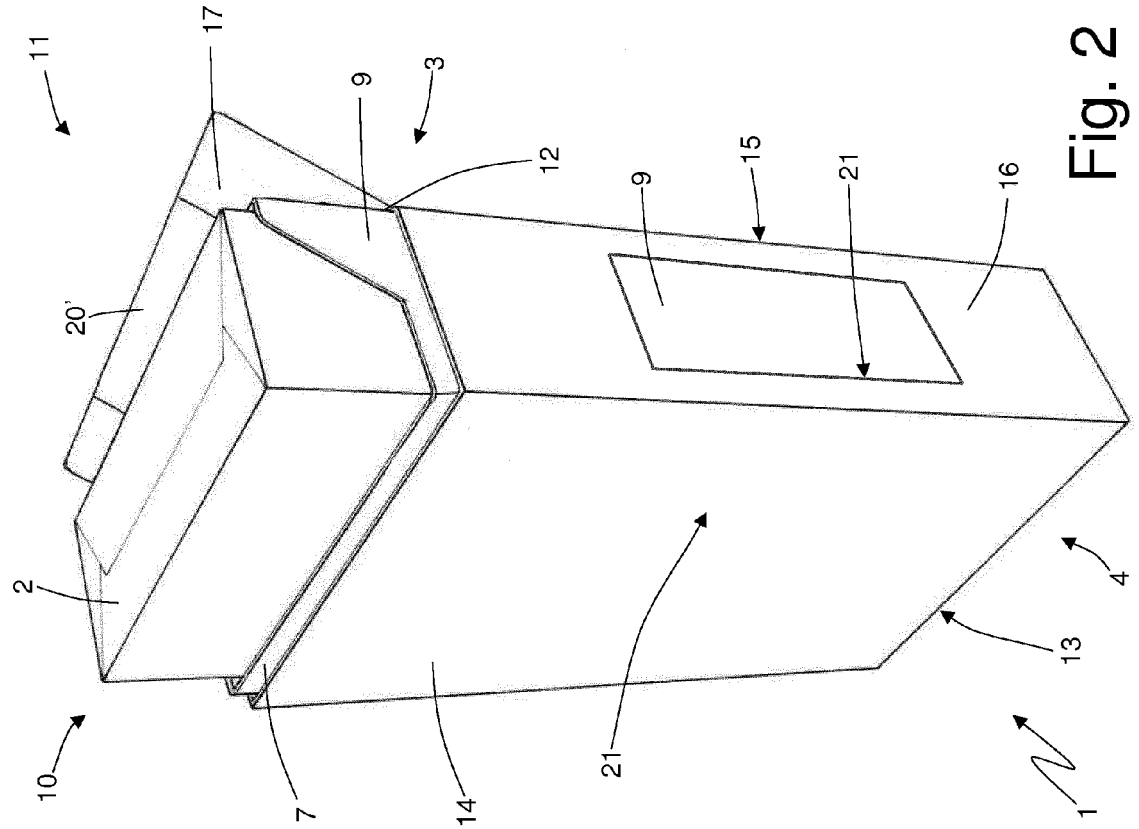

Fig. 2

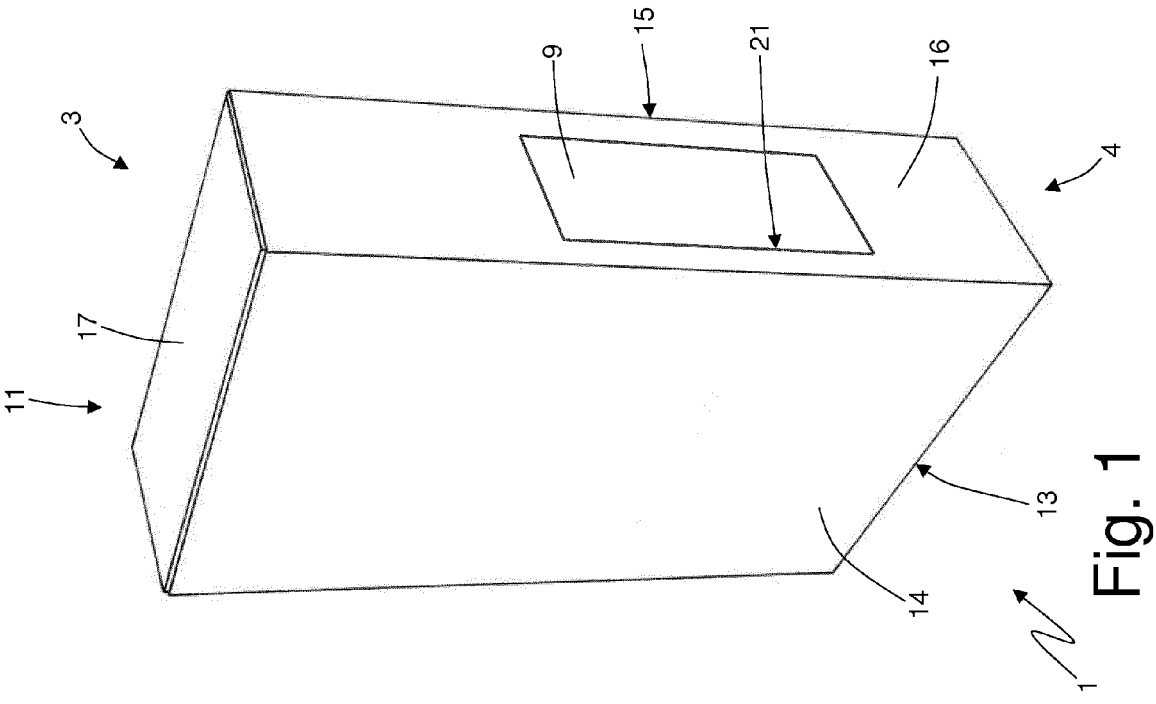

Fig. 1

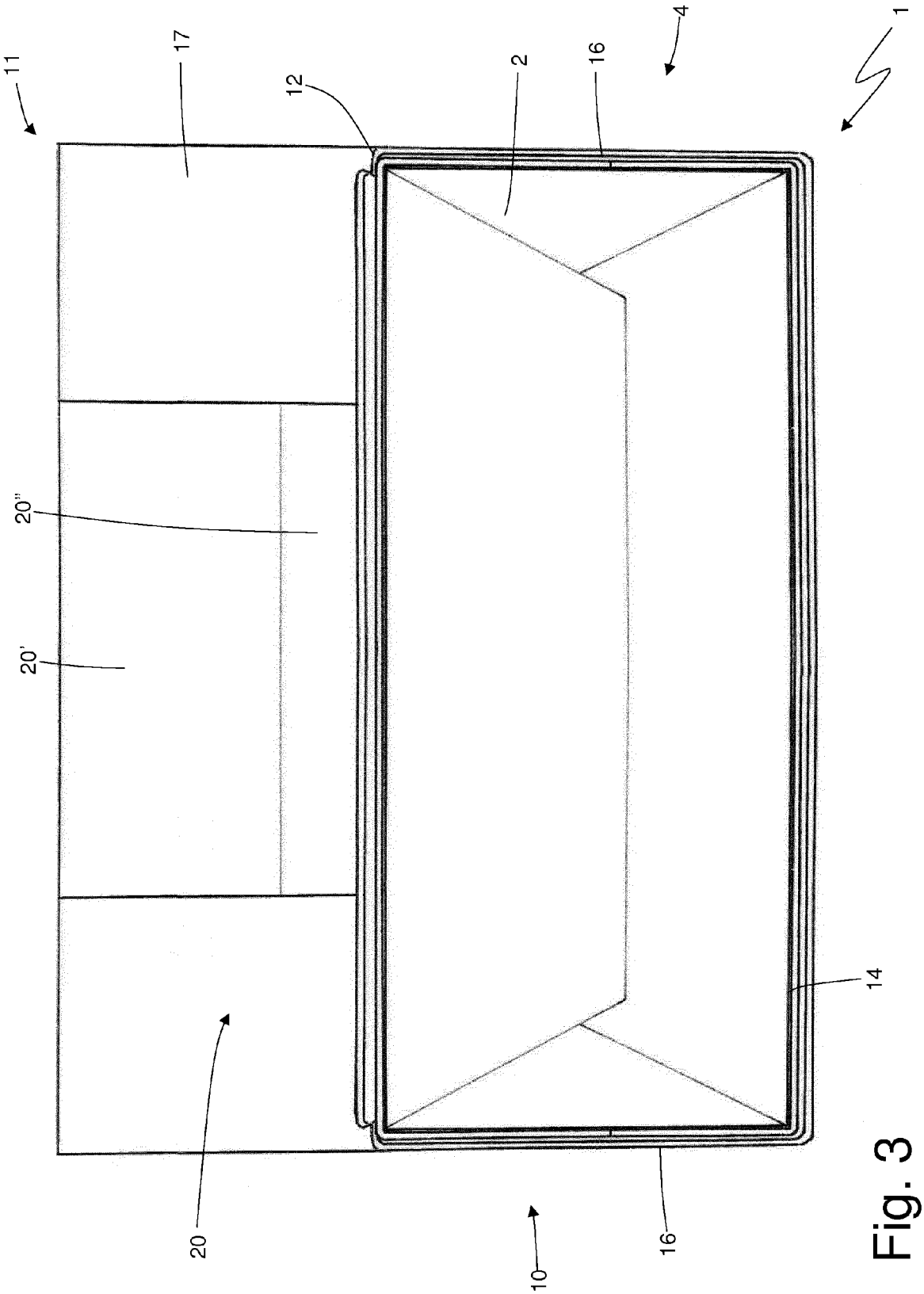

Fig. 3

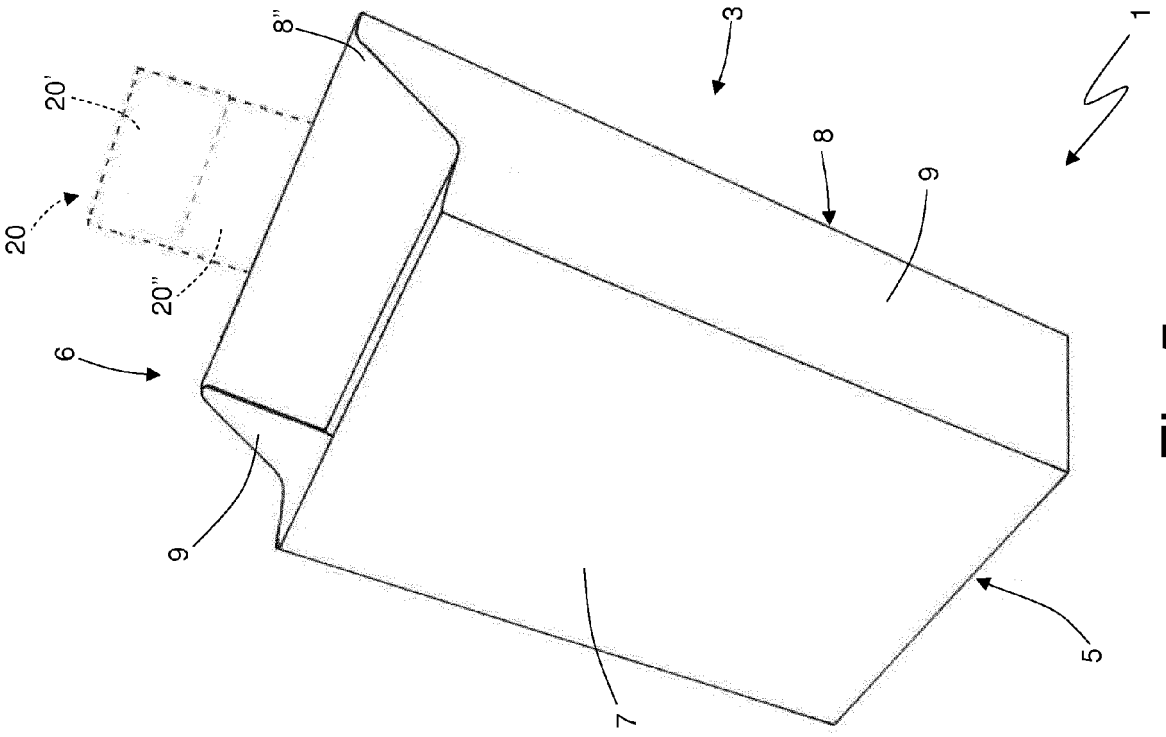

Fig.5

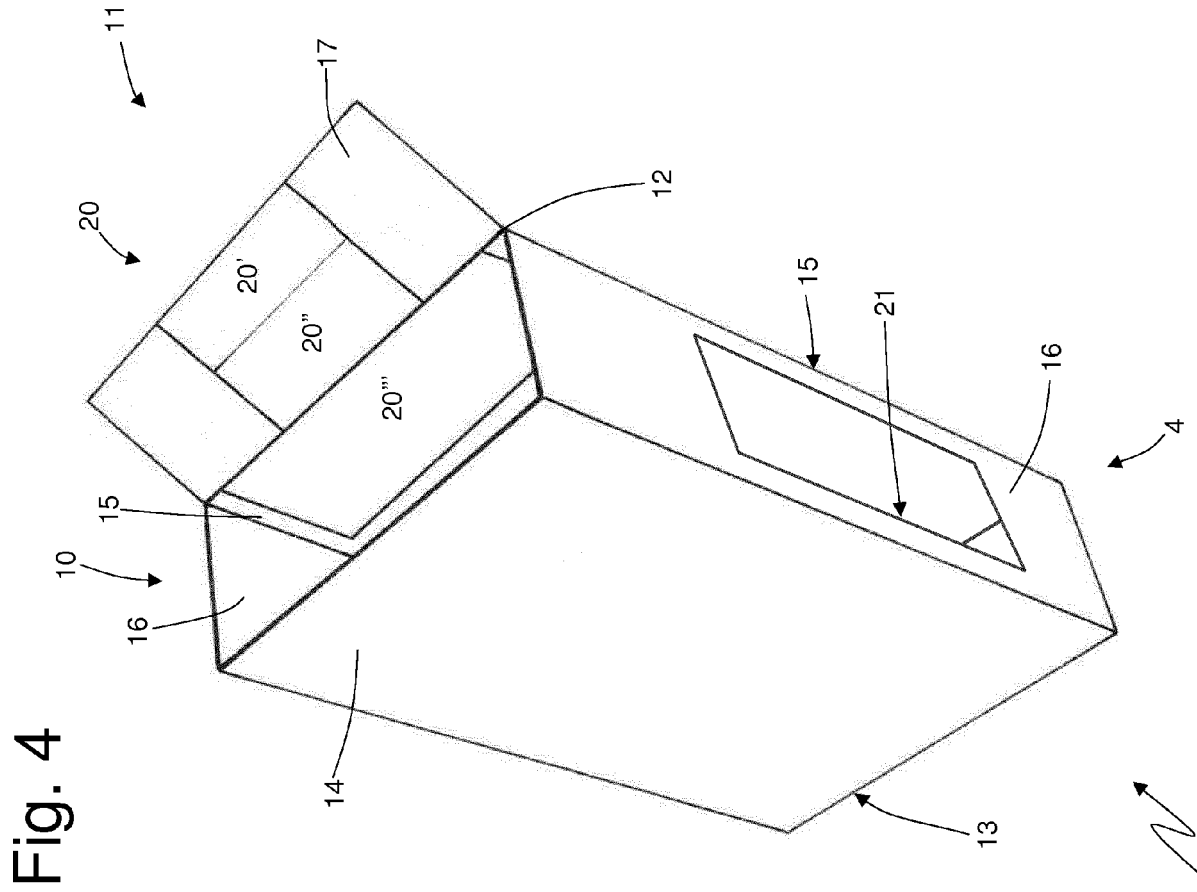

Fig. 4

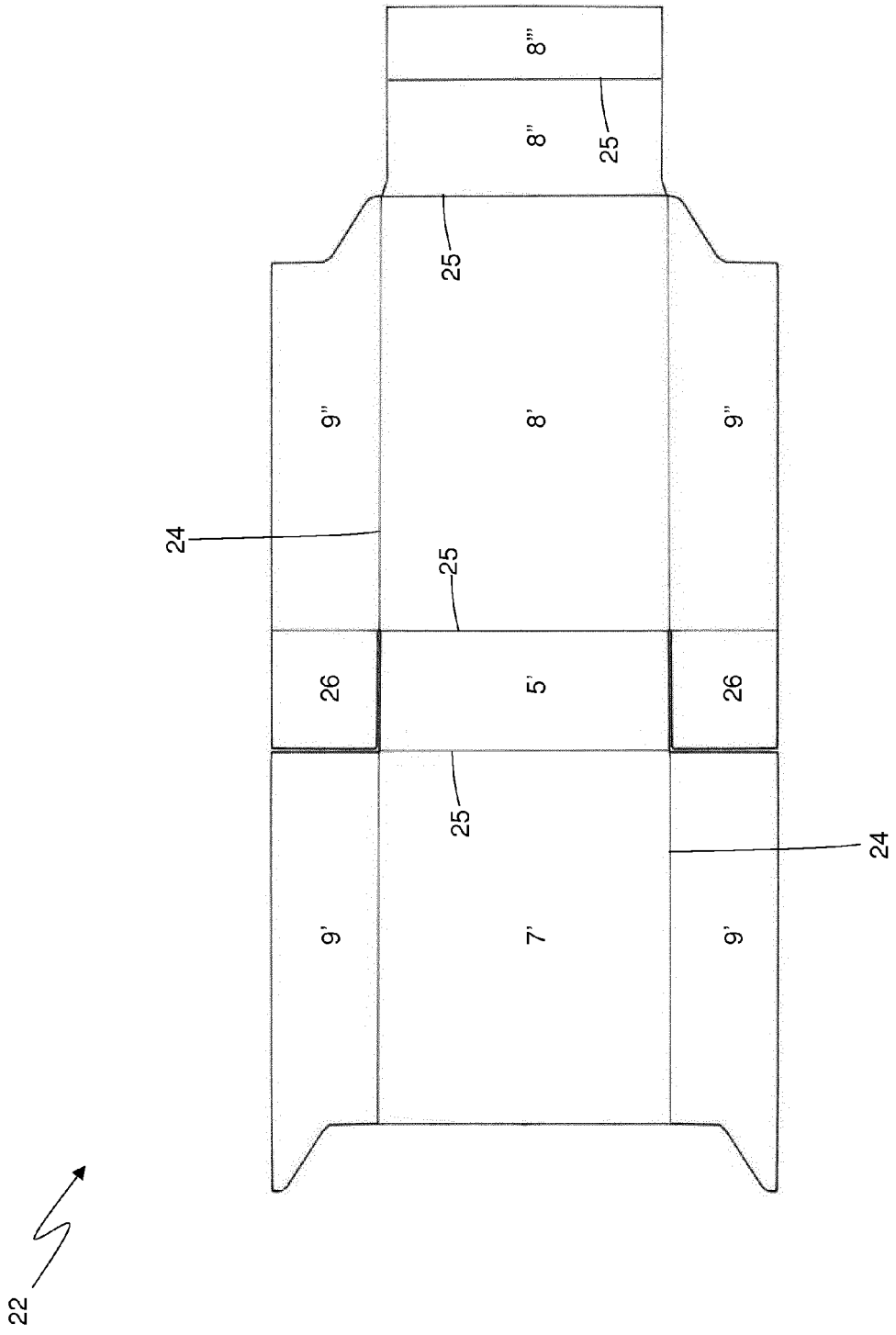

Fig. 6

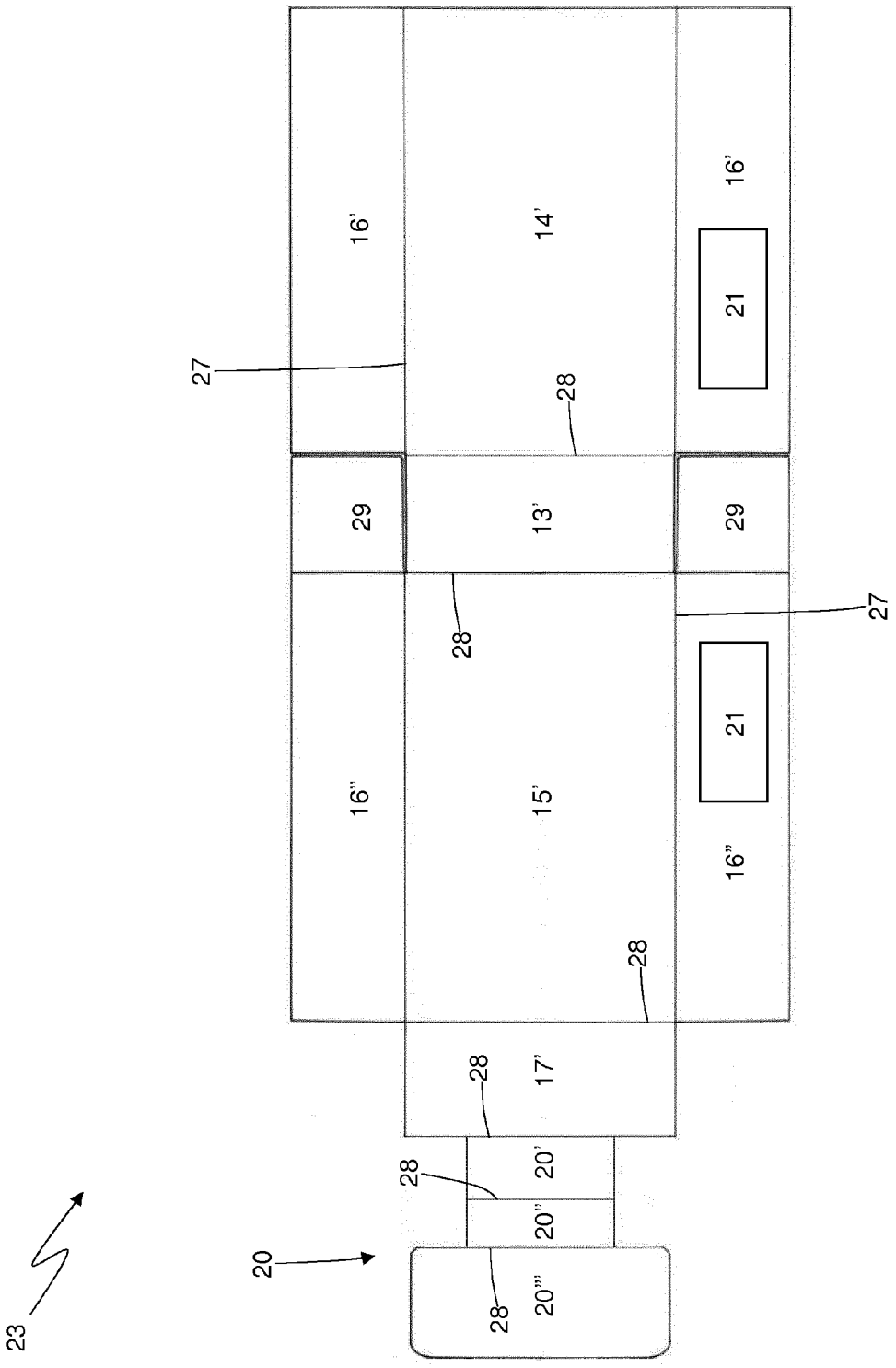
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Fig. 7

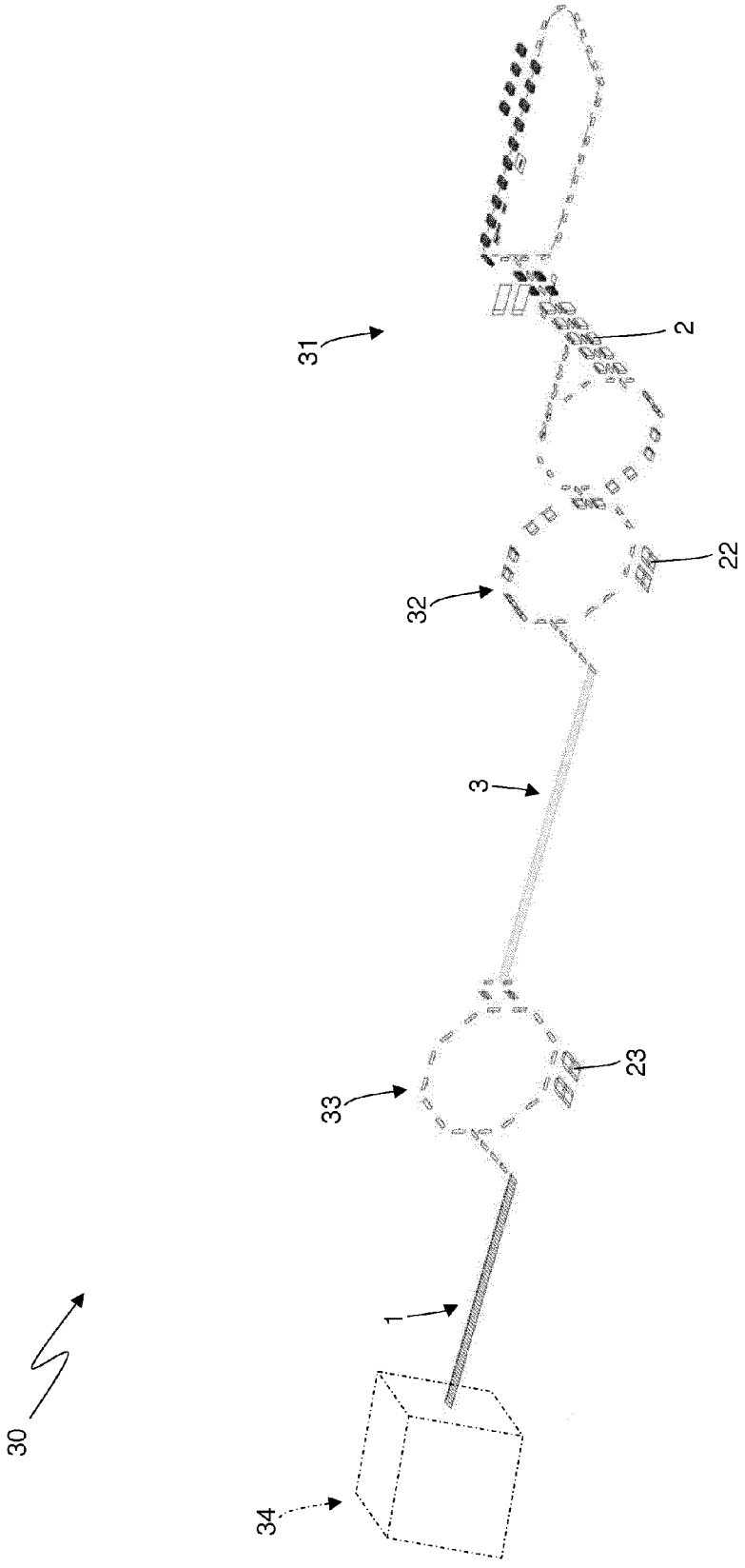

Fig. 8

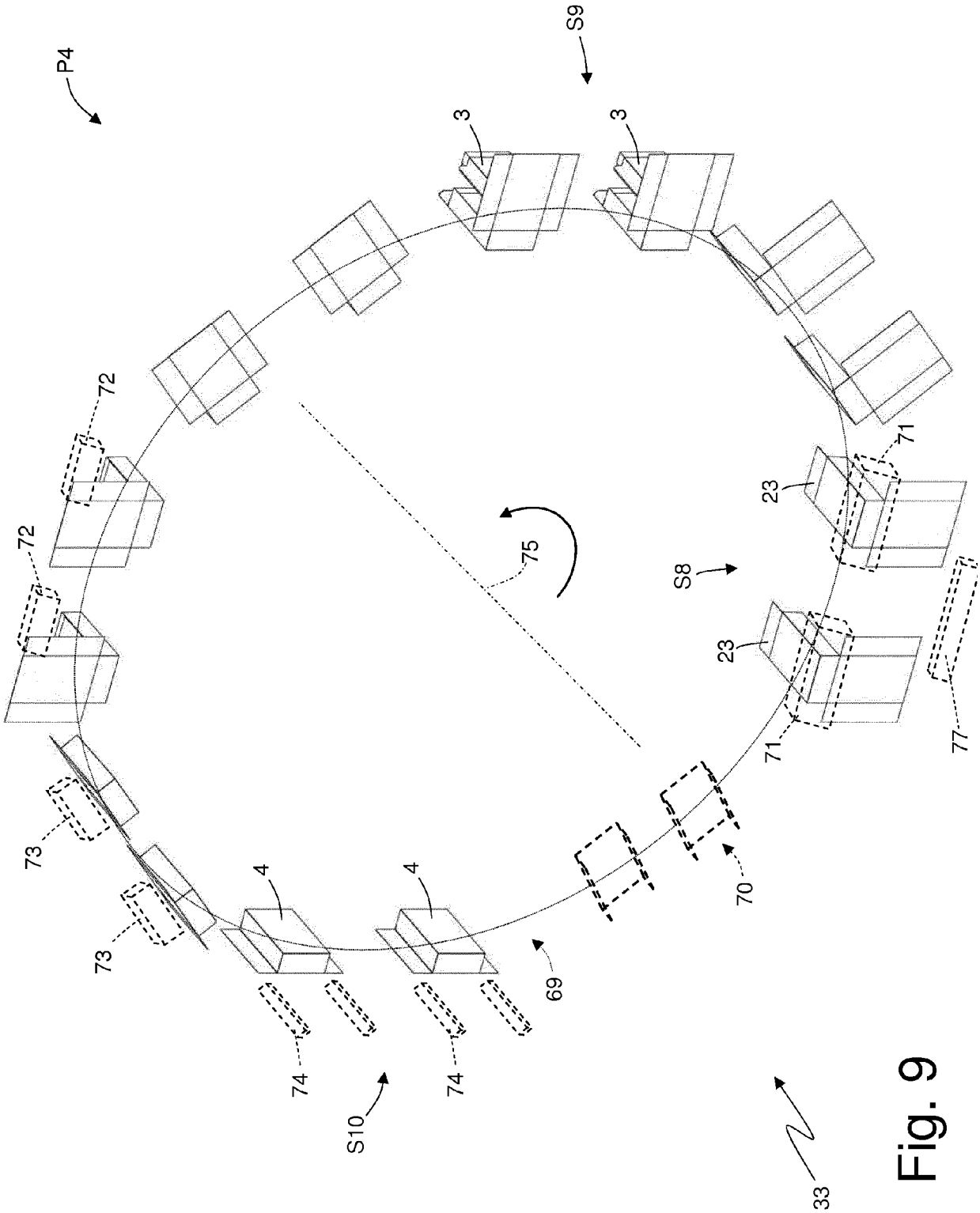

Fig. 9

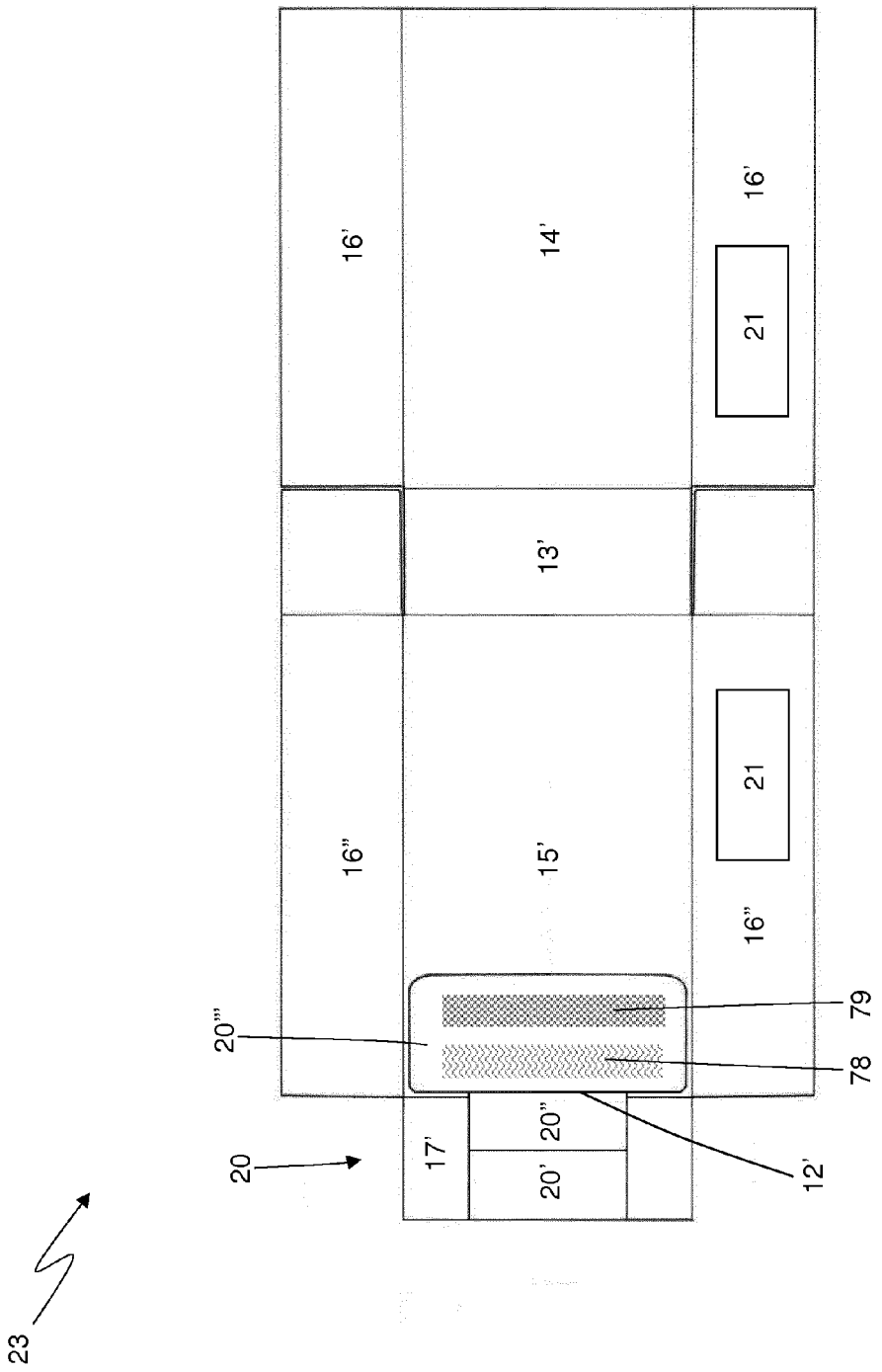

Fig. 10

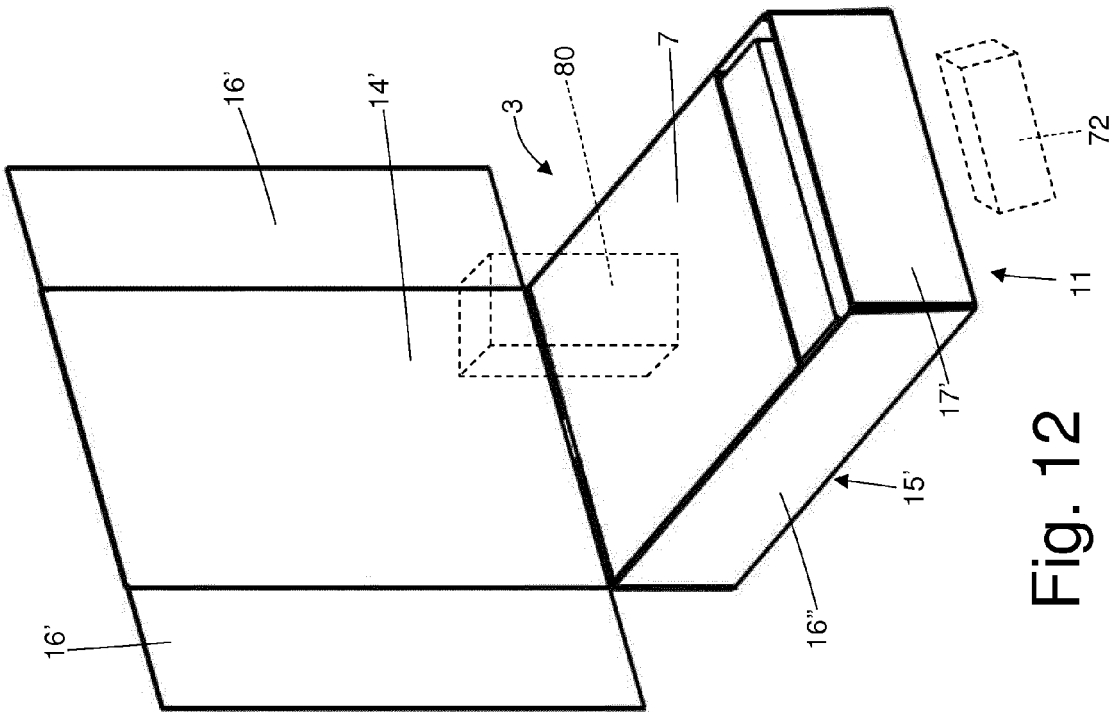

Fig. 12

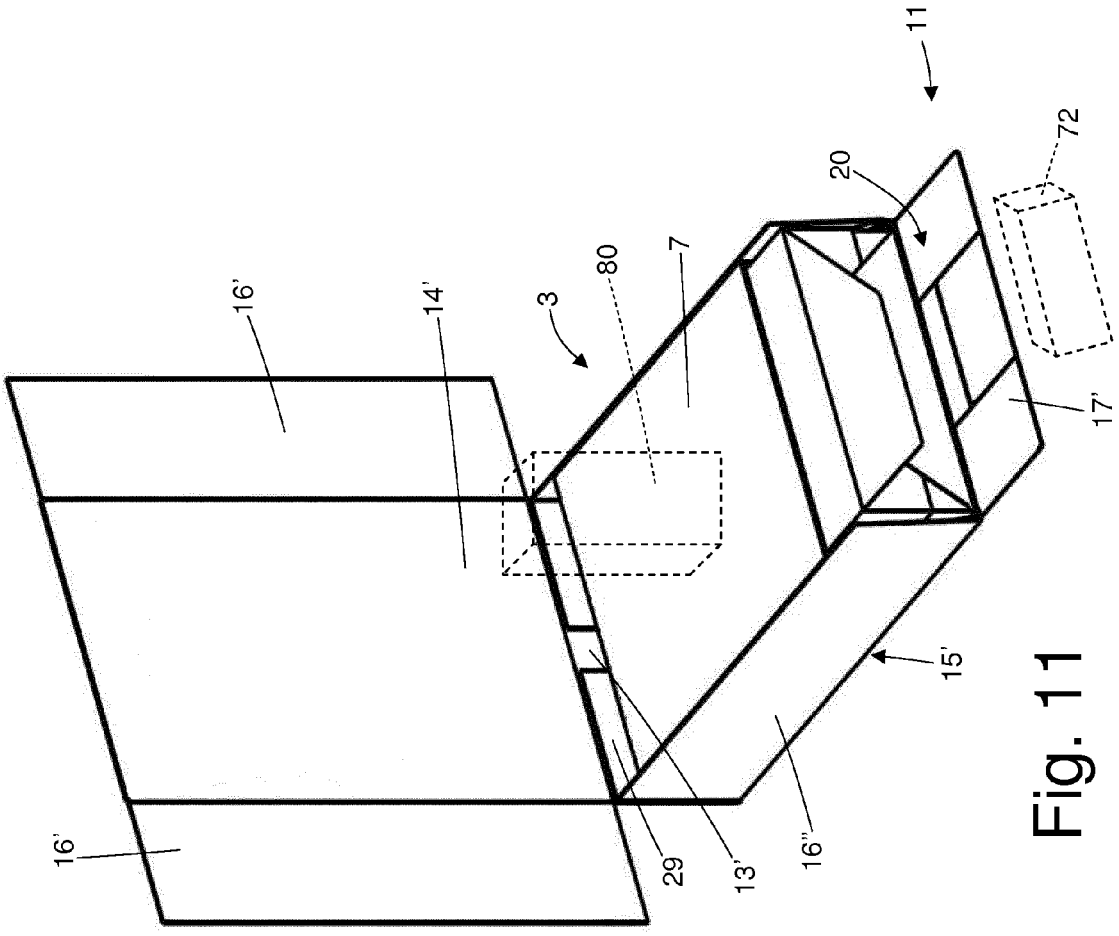

Fig. 11

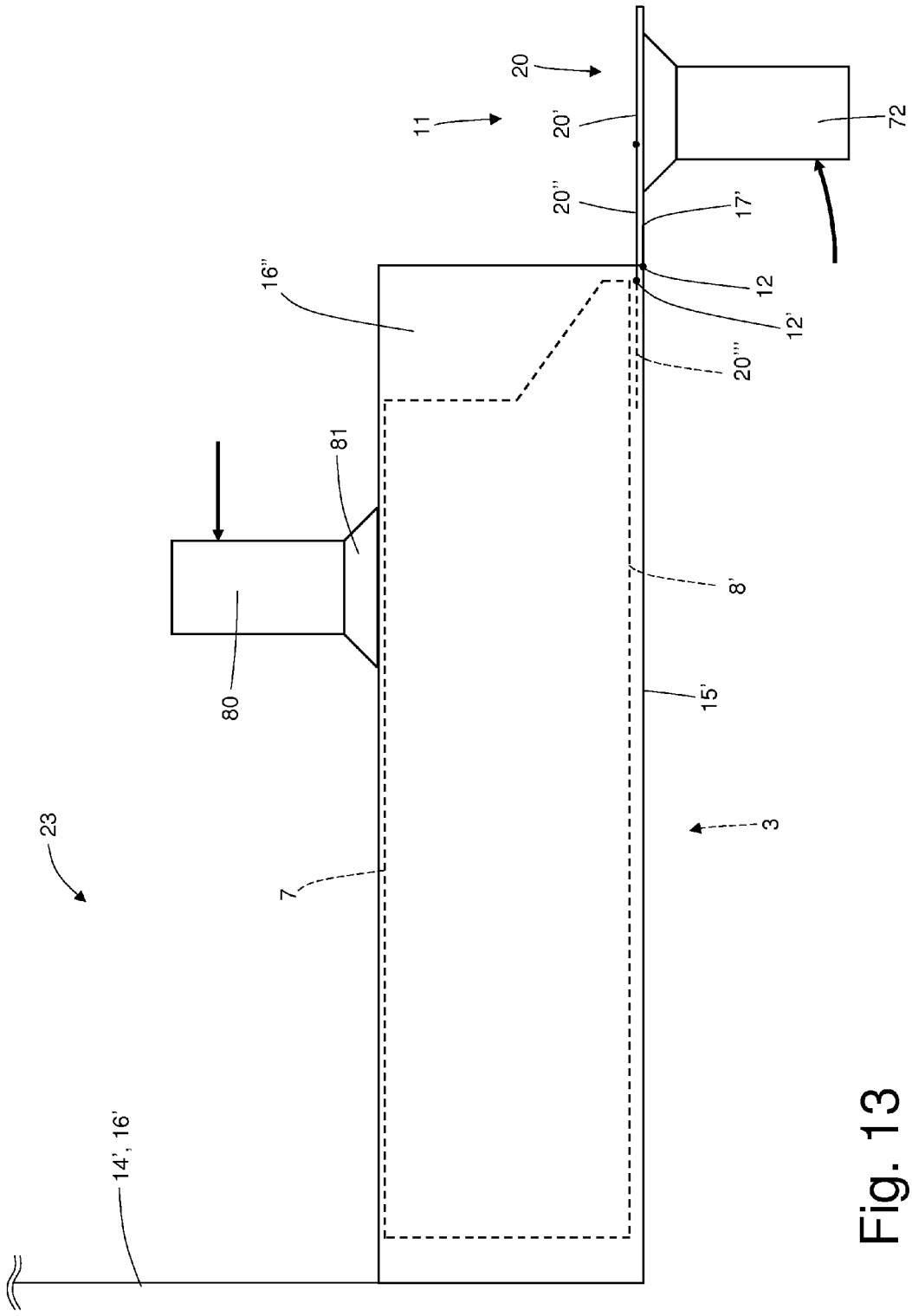

Fig. 13

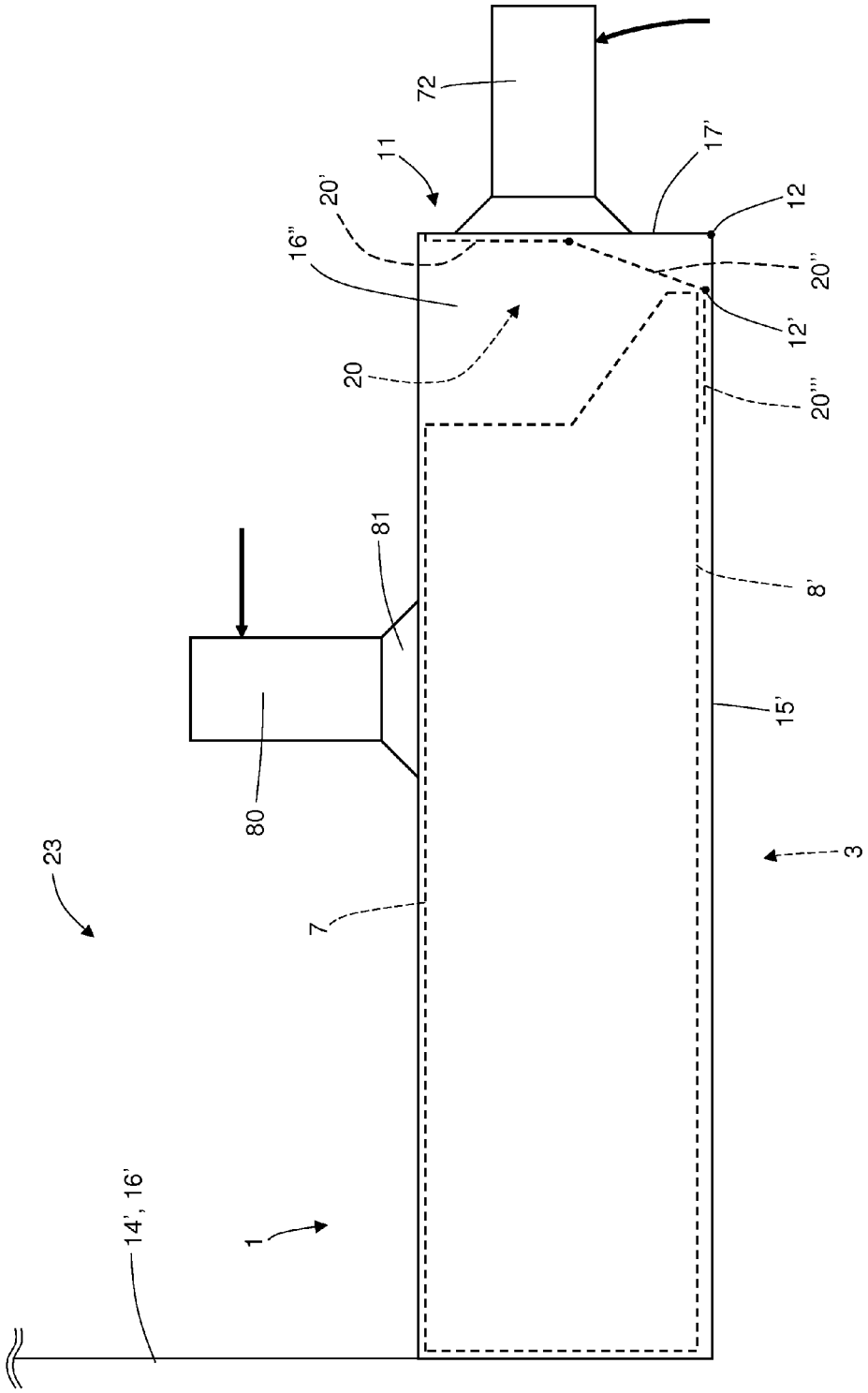

Fig. 14

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EUROPEAN SEARCH REPORT

Application Number
EP 13 15 2949

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B65B
B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	3 May 2013	Schelle, Joseph

CATEGORY OF CITED DOCUMENTS

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E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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